

Service Manual



Colour Television TC-21S3M TC-14S3M Z-7 Chassis

Specifications

(Information in brackets {} refer to TC-14S3M)

Power Source : 220-240V AC, 50Hz

Power Consumption : 50W {33W}

Video / Audio Terminals :

AV1 IN	Video (21 pin) 1V p-p 75Ω Audio (21 pin) 500mV rms 10kΩ RGB (21 pin)
AV1 OUT	Video (21 pin) 1V p-p 75Ω Audio (21 pin) 500mV rms 1kΩ
RCA IN	Video 1V p-p 75Ω
RCA IN	Audio 500mV rms, 10KΩ

High Voltage : 27kV + 0.7kV / - 1kV
{23kV + 0.7kV / - 1kV}
(zero beam current)

Picture Tube : A51EFS83X191 51 cm V 90°
{A34EAC01X13 34 cm V 90°}
measured diagonally

Audio Output :
Speaker 6 W (Music Power)
8 Ω Impedance

Headphone 8 Ω Impedance

Accessories supplied : 1 x BNC to 21 pin Euro
connector cable

Dimensions :
Height : 477 mm {364mm}
Width : 518 mm {389mm}
Depth : 478 mm {384mm}

Net Weight : 21kg {10kg}

Specifications are subject to change without notice.
Weight and dimensions shown are approximate.

IMPORTANT

This receiver uses a HOT chassis, after service please ensure that the chassis is returned to its correct position.
Particular care being taken to the position of the customer controls.
Failure to do so could endanger customer safety.

Panasonic

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SAFETY PRECAUTIONS

GENERAL GUIDE LINES

1. It is advisable to insert an isolation transformer in the AC supply before servicing a hot chassis.
2. When servicing, observe the original lead dress in the high voltage circuits. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
3. After servicing, see that all the protective devices such as insulation barriers, insulation papers, shields and isolation R-C combinations are correctly installed.
4. When the receiver is not being used for a long period of time, unplug the power cord from the AC outlet.
5. Potentials as high as 28kV {24kV} are present when this receiver is in operation. Operation of the receiver without the rear cover involves the danger of a shock hazard from the receiver power supply. Servicing should not be attempted by anyone who is not familiar with the precautions necessary when working on high voltage equipment. Always discharge the anode of the picture to the chassis before handling the tube.
6. After servicing make the following leakage current checks to prevent the customer from being exposed to shock hazards.
4. Check each exposed Metallic part and check the voltage at each point.
5. Reverse the AC plug at the outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 1.4 Vrms. In case a measurement is outside the limits specified, there is a possibility of a shock hazard, and the receiver should be repaired and rechecked before it is returned to the customer.

HOT CHECK CIRCUIT

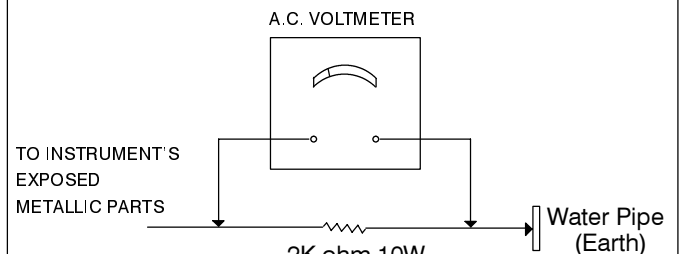


Fig.1

LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs of the plug.
2. Turn on the receiver's power switch.
3. Measure the resistance value with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the receiver, such as screw heads, aerials, connectors, control shafts etc. When the exposed metallic part has a return path to the chassis the reading should be between 4M ohm and 20M ohm. When the exposed metal does not have a return path to the chassis the reading must be infinite.

LEAKAGE CURRENT HOT CHECK

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a 2kΩ 10W resistor in series with an exposed metallic part on the receiver and an earth such as a water pipe.
3. Use an AC voltmeter with high impedance to measure the potential across the resistor.

X-RADIATION WARNING

1. The potential sources of X-Radiation in TV sets are the high voltage section and the picture tube.
2. When using a picture tube test jig for service ensure that the jig is capable of handling 28kV {24kV} without causing X-Radiation.

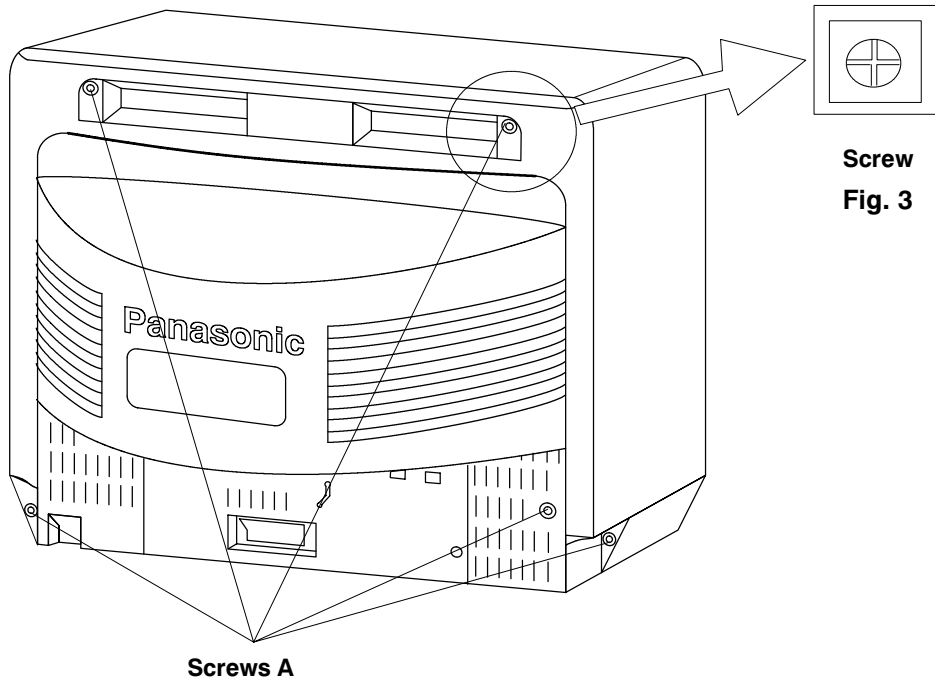
NOTE : It is important to use an accurate periodically calibrated high voltage meter

1. Set the brightness to minimum.
2. Measure the high voltage. The meter should indicate 27kV + 0.7 / - 1kV {23kV + 0.7kV / - 1kV} if the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure.
3. To prevent any X-Radiation possibility, it is essential to use the specified tube.

SERVICE HINTS

HOW TO REMOVE THE REAR COVER

1. Remove the 5 screws (A) as shown in Fig.2/Fig.3.



Screws A

Fig. 2

HOW TO MOVE THE CHASSIS INTO THE SERVICE POSITION

1. Hold and lift the rear of the E- PCB chassis and gently pull the chassis toward you.
2. Release the respective wiring clips and rotate the chassis clockwise, moving the EHT lead around the left side of the CRT neck.
3. Slide the lower edge of the chassis into the power cable holder case whilst sliding the upper edge of the board into the chassis holding block.
4. After servicing ensure all wiring is returned to its original position before returning the receiver to the customer.

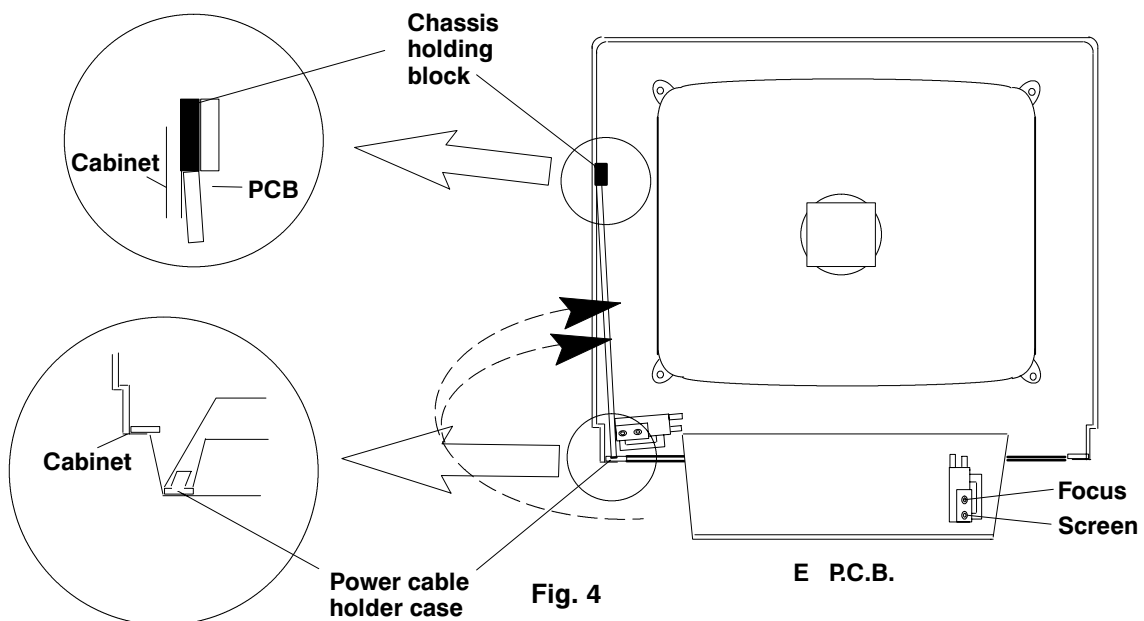


Fig. 4

ALIGNMENT SETTINGS

1. To access Service Mode connect Service Pack (Part No. MSK2681) and using a Z7 Remote Control.
2. Press the Off Timer button on the remote control and at the same time press the V (down) button on the customer controls at the front of the TV, this will place the TV into Service Mode.
3. Press the Δ / V buttons to step up / down through the functions.
4. Press the + / – buttons to alter the function values.
5. Press the TV/AV button on the remote control after each adjustment has been made to store the required values.
6. To exit Service Mode press the Normalisation button.

NOTE : The figures used below are nominal and used for representative purposes only

Alignment Function		Settings / Special Features
1. Vertical amplitude	V–Amp 27	Optimum setting
2. Vertical position	V–Pos 03	Optimum setting
3. Horizontal centre	H–Ctr 07	Optimum setting
4. Red cutoff	R–Cut 186	Optimum setting
5. Green cutoff	G–Cut 220	Optimum setting
6. Blue cutoff	B–Cut 213	Optimum setting
7. Red drive	R–Drv 46	Optimum setting
8. Blue drive	B–Drv 36	Optimum setting
9. AGC	AGC 33	No adjustment
10. Sub contrast	S–Con 33	Optimum setting
11. Sub colour	S–Col 39	Optimum setting
12. Sub bright	S–Bri 40	Optimum setting

ADJUSTMENTS

ITEM/PREPARATION	ADJUSTMENT PROCEDURE
B VOLTAGE 1. Operate the TV set. 2. Set controls : Bright minimum Sub Bright minimum Volume minimum Beam Current Zero	1. Confirm the indicated test points for the specified voltage. TPE 1: 10V $\pm$ 1V TPE 2: 5V $\pm$ 0.3V TPE 3: 12.5V $\pm$ 1V TPE 4: 22V $\pm$ 2.5V TPE 5: 5V $\pm$ 0.3V TPE 6: 9V $\pm$ 0.3V TPE 9: 30V $\pm$ 2.5V TPE 10: 185V $\pm$ 10V {135V $\pm$ 10V} TPE 11: -13V $\pm$ 1V TPE 12: 12V $\pm$ 1.5V TPE 13: 125V $\pm$ 1.5V {104V $\pm$ 1.5V} TPE 14: 8V $\pm$ 1V TPE 18: 8V $\pm$ 1V TPE 19: 31V $\pm$ 1.5V

SELF CHECK

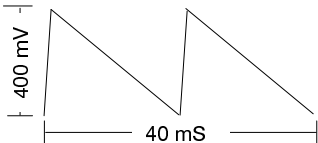
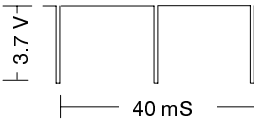
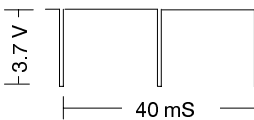
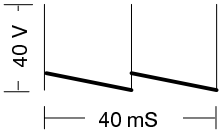
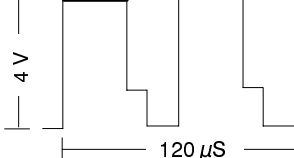
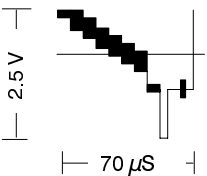
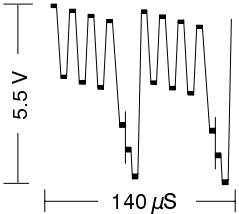
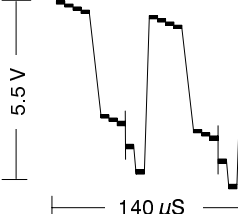
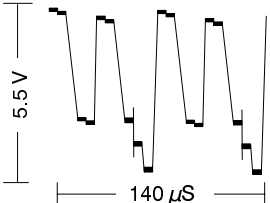
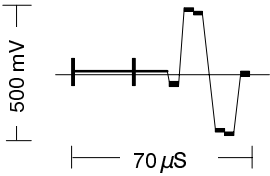
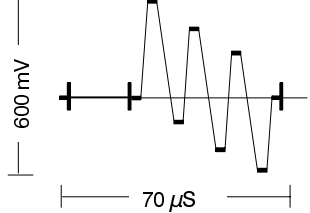
Self check is used to automatically check the Bus Lines Hexadecimal code of the TV set.

Self check can be accessed by connecting Service Pack (Part No. MSK2681) and using a Z7 Remote Control.

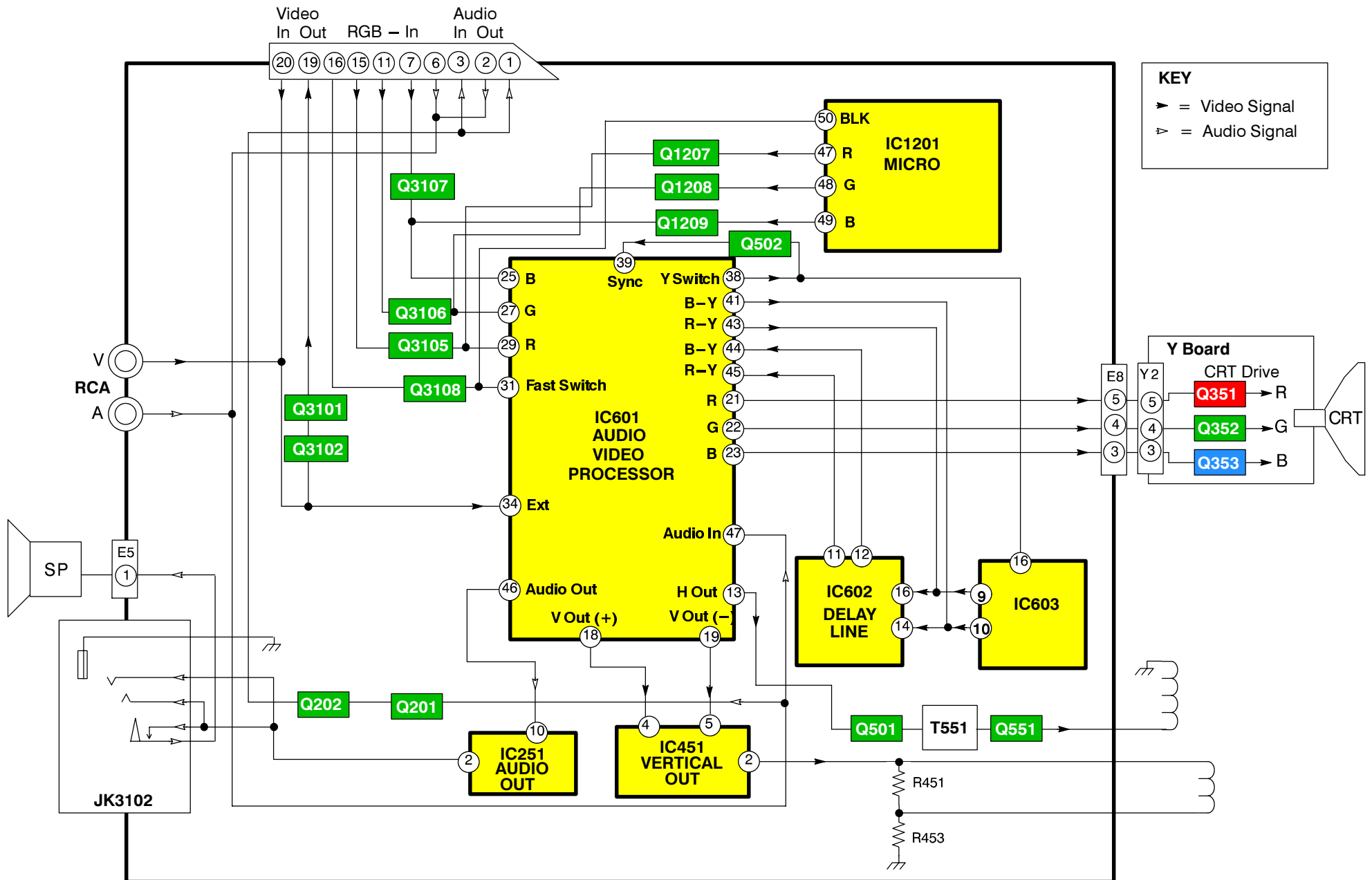
To get into the Self Check mode press the Status button on the Remote Control, followed by the V (down) button on the customer controls at the front of the TV, and the screen will show:—

OPT 18

WAVEFORM PATTERN TABLE

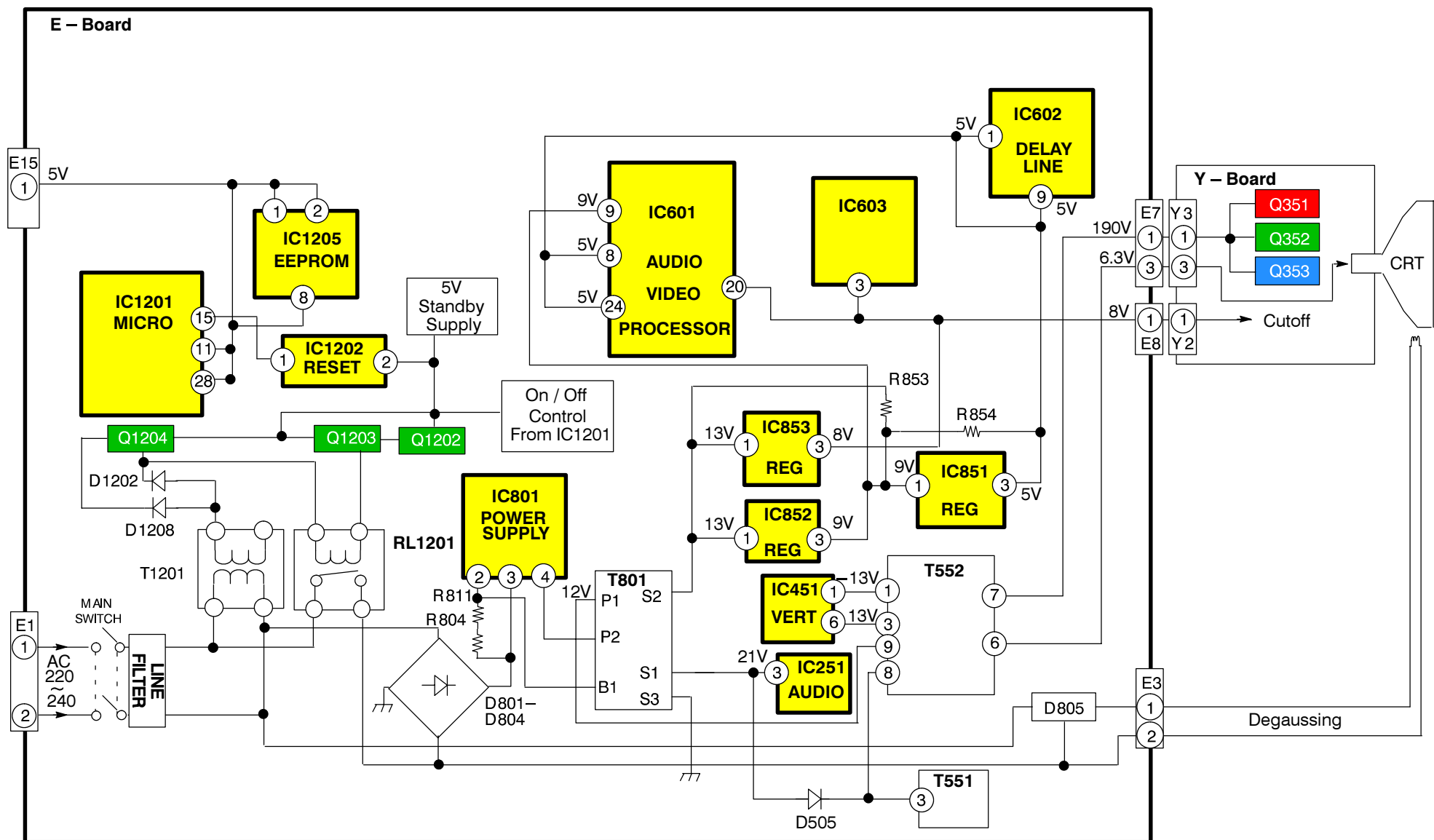
Vert Out IC IN IC451 pin 4 5 mS 20 mV 	SDA IC601 pin 14 5 mS 5 mV 	SCL IC1201 pin 3 5 mS 1 V 
Vert Drive IC451 pin 2 5 mS 1 V 	H. Out IC601 pin 13 20 μS 1 V 	IF VO IC601 pin 52 20 μS 50 mV 
B Out TPE15 20 μS 0.1 V 	G Out TPE16 20 μS 0.1 V 	R Out TPE17 20 μS 0.1 V 
'RY' Out IC601 pin 43 20 μS 20 mV 	'BY' Out IC601 pin 41 20 μS 20 mV 	

AUDIO / VIDEO SIGNAL BLOCK DIAGRAM

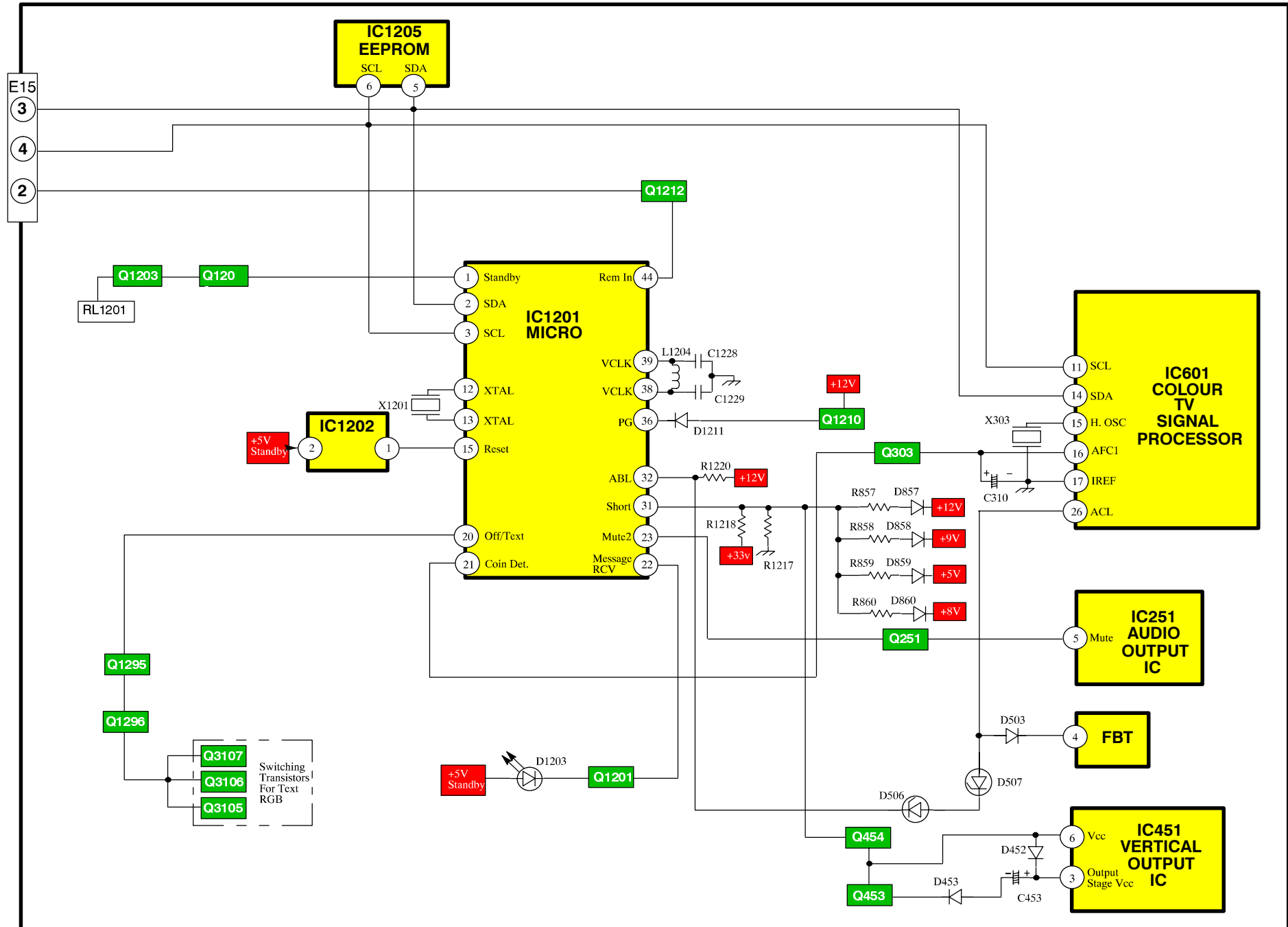


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POWER SUPPLY BLOCK DIAGRAM



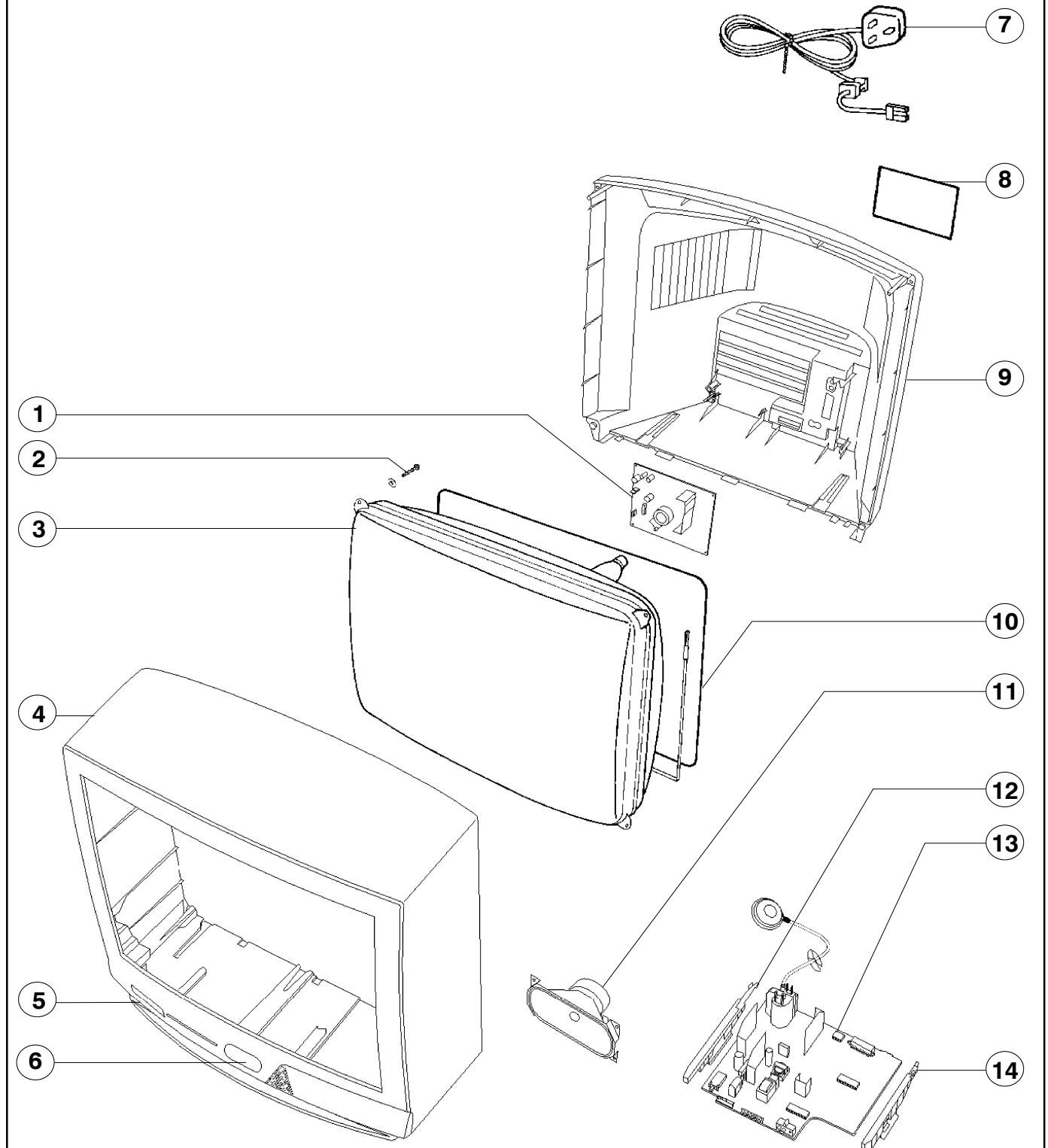
CONTROL LINE BLOCK DIAGRAM



PARTS LOCATION

NOTE :

The numbers on the exploded view below refer to the miscellaneous section of the Replacement Parts List.



REPLACEMENT PARTS LIST

Important Safety Notice

Components identified by Δ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

PARTS COMMON TO TC – 21S3M AND TC – 14S3M

Ref No.	Part No.	Description	Ref No.	Part No.	Description
MISCELLANEOUS COMPONENTS					
1)	*****	REFER TO DIFFERENCE LIST	C312	ECUV1H104ZFX	S.M.CAP 50V 100nF
2)	*****	REFER TO DIFFERENCE LIST	C313	ECUV1H104ZFX	S.M.CAP 50V 100nF
3)	*****	REFER TO DIFFERENCE LIST	C314	ECEA1HNR47UB	ELECT 50V 0.47 μ F
4)	*****	REFER TO DIFFERENCE LIST	C315	ECEA1HN2R2UB	ELECT 50V 2.2 μ F
5)	*****	REFER TO DIFFERENCE LIST	C319	ECUV1H104ZFX	S.M.CAP 50V 100nF
6)	TKP8E1147	SMOKE PANEL	C355	ECKC3D152J	CERAMIC 2KV 1.5nF Δ
7)	*****	REFER TO DIFFERENCE LIST	C357	ECKC2H152J	CERAMIC 500V 1.5nF Δ
8)	*****	REFER TO DIFFERENCE LIST	C362	ECUV1H102ZFX	S.M.CAP 50V 1nF
9)	*****	REFER TO DIFFERENCE LIST	C368	ECEA2EU010	ELECT 250V 1 μ F
10)	*****	REFER TO DIFFERENCE LIST	C370	ECA1CM220GB	ELECT 16V 22 μ F
11)	*****	REFER TO DIFFERENCE LIST	C371	ECA1CM221GB	ELECT 16V 220pF
12)	*****	REFER TO DIFFERENCE LIST	C401	ECUV1H223KBX	S.M.CAP 50V 22nF
13)	*****	REFER TO DIFFERENCE LIST	C402	ECUV1H472KBX	S.M.CAP 50V 4.7nF
14)	*****	REFER TO DIFFERENCE LIST	C403	ECA1HM010GB	ELECT 50V 1pF
	TBM8E1415	BLIND SHEET	C404	ECUV1H103ZFX	S.M.CAP 50V 10nF
	TJS8E006	SCART CONNECTOR	C452	ECQM1H274J	FILM 50V 270nF
	TQB8E2440	INST BOOK Δ	C457	ECQM1H394J	FILM 50V 390nF
	31221212478	FIX CLIP	C461	ECUV1H100CCX	S.M.CAP 50V 10pF
	31221212478	FIX CLIP	C501	ECA1HM010GB	ELECT 50V 1pF
	31221212478	FIX CLIP	C502	ECUV1H223KBX	S.M.CAP 50V 22nF
	TBX8E037	3 KEY BUTTON PAD	C503	ECUV1H391JCX	S.M.CAP 50V 390pF
	TMW8E015-2	LED HOLDER	C504	ECEA1HN010UB	ELECT 50V 1 μ F
INTEGRATED CIRCUITS			C505	ECUV1H331JCX	S.M.CAP 50V 330pF
IC1201	SDA5222V50	MICROPROCESSOR	C506	ECQM1273KZW	FILM 100V 27nF
IC1202	MN1280R	RESET	C507	ECEA1HGE100	ELECT 50V 10 μ F
IC251	LA4265	AUDIO OUTPUT	C541	ECEA1EN4R7UB	ELECT 25V 4.7 μ F
IC451	LA7840	VERTICAL OUTPUT	C550	ECA1VM471GB	ELECT 35V 470pF
IC601	M52778SP-A	AUDIO / VIDEO PROCESSOR	C559	ECKC2H471J	CERAMIC 500V 470pF Δ
IC602	U3666M-MDP	DELAY LINE	C560	ECKC2H471J	CERAMIC 500V 470pF Δ
IC603	TDA8395PN2	SECAM DECODER	C561	ECEA2EU100	ELECT 250V 10 μ F
IC801	STR58041A	POWER SUPPLY	C562	ECKC2H471J	CERAMIC 500V 470pF Δ
IC851	L78M05MRB	5V REGULATOR	C563	ECA1VM471GB	ELECT 35V 470pF
IC852	L78M09MRB	9V REGULATOR	C564	ECA1CM471GB	ELECT 16V 470pF
IC853	AN78M08LB	8V REGULATOR	C565	ECA1VM471GB	ELECT 35V 470pF
CAPACITORS			C566	ECKC2H471J	CERAMIC 500V 470pF Δ
C114	ECA1HM010GB	ELECT 50V 1pF	C601	ECUV1H473KBX	S.M.CAP 50V 47nF
C206	ECEA1CN470	ELECT 16V 47 μ F	C602	ECUV1H153KBX	S.M.CAP 50V 15nF
C207	ECEA1CN100	ELECT 16V 10 μ F	C603	ECA1HM010GB	ELECT 50V 1pF
C208	ECA1CM100GB	ELECT 16V 10pF	C605	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0Ω
C217	ECEA1CN101	ELECT 16V 100 μ F	C606	ECUV1H104ZFX	S.M.CAP 50V 100nF
C251	ECA1EM471GB	ELECT 25V 470pF	C607	ECUV1H104ZFX	S.M.CAP 50V 100nF
C252	ECA1HM010GB	ELECT 50V 1pF	C608	ECUV1H470JCX	S.M.CAP 50V 47pF
C253	ECEA1EGE470	ELECT 25V 47 μ F	C609	ECUV1H470JCX	S.M.CAP 50V 47pF
C254	ECUV1H272JCX	S.M.CAP 50V 2.7nF	C610	ECA1HM101GB	ELECT 50V 100pF
C255	ECQB1H104J	FILM 50V 100nF	C611	ECUV1H104ZFX	S.M.CAP 50V 100nF
C256	ECQM1H224J	FILM 50V 220nF	C612	ECUV1H103KBX	S.M.CAP 50V 10nF
C257	ECQM1H474J	FILM 50V 470nF	C613	ECUV1H103KBX	S.M.CAP 50V 10nF
C258	ECEA1EGE101	ELECT 25V 100 μ F	C614	ECUV1H104ZFX	S.M.CAP 50V 100nF
C260	ECA1EM102GB	ELECT 25V 1nF	C615	B32529-C224	CAPACITOR 0.22 μ F
C261	ECUV1H471JCX	S.M.CAP 50V 470pF	C616	222236576104	FILM 760V 100nF
C262	ECA1HM101GB	ELECT 50V 100pF	C617	ECUV1H104ZFX	S.M.CAP 50V 100nF
C301	ECA1HM101GB	ELECT 50V 100pF	C618	ECA1HM101GB	ELECT 50V 100pF
C302	ECUV1H104ZFX	S.M.CAP 50V 100nF	C619	ECUV1H103KBX	S.M.CAP 50V 10nF
C303	ECA1CM471GB	ELECT 16V 470pF	C620	ECUV1H103KBX	S.M.CAP 50V 10nF
C304	ECUV1H104ZFX	S.M.CAP 50V 100nF	C623	ECUV1H104ZFW	S.M.CAP 50V 100nF
C305	ECA1HM101GB	ELECT 50V 100pF	C624	ECUV1H560JCX	S.M.CAP 50V 56pF
C307	ECA1HM101GB	ELECT 50V 100pF	C625	ECUV1H560JCX	S.M.CAP 50V 56pF
C308	ECUV1H104ZFW	S.M.CAP 50V 100nF	C626	ECUV1H560JCX	S.M.CAP 50V 56pF
C309	ECUV1H223KBX	S.M.CAP 50V 22nF	C627	ECUV1H560JCX	S.M.CAP 50V 56pF
C310	ECA1HM010GB	ELECT 50V 1pF	C628	ECUV1H390JCX	S.M.CAP 50V 39pF
C311	ECUV1H104ZFX	S.M.CAP 50V 100nF	C630	ECUY1H103JCW	S.M.CAP 50V 10nF
			C802	ECQU2A823MNB	FILM 200V 82nF
			C803	ECKC2H472J	CERAMIC 500V 4.7nF Δ
			C804	ECKC2H472J	CERAMIC 500V 4.7nF Δ
			C805	ECKC2H472J	CERAMIC 500V 4.7nF Δ
			C806	ECKC2H472J	CERAMIC 500V 4.7nF Δ
			C807	ECOS2GA101BB	ELECT 400V 100 μ F
			C808	ECQB1H333J	FILM 50V 33nF
			C809	ECKC3D471JB	CERAMIC 2KV 470pF Δ
			C810	ECA1VM101GB	ELECT 35V 100pF

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Ref No.	Part No.	Description			
C812	ECA2CHG221E	ELECT	160V	220pF	
C813	ECQU2A823MNB	FILM	200V	82nF	
C817	ECA1VM101GB	ELECT	35V	100pF	
C818	ECKWNA471MBCC	CERAMIC	250V	470pF	
C820	ECKWNA332MECC	CERAMIC	250V	3.3nF	
C821	ECKC3A101J	CERAMIC	1.0KV	100pF	
C853	ECEA1EGE102	ELECT	25V	1000µF	
C854	ECA1HHG471E	ELECT	50V	470pF	
C855	ECUV1H104ZFX	S.M.CAP	50V	100nF	
C856	ECUV1H104ZFX	S.M.CAP	50V	100nF	
C857	ECA1HM101GB	ELECT	50V	100pF	
C858	ECA1AM222B	ELECT	10V	2.2nF	
C859	ECUV1H104ZFX	S.M.CAP	50V	100nF	
C860	ECA1HM101GB	ELECT	50V	100pF	
C861	ECA1CM102B	ELECT	16V	1nF	
C1201	ECA1EM102GB	ELECT	25V	1nF	
C1202	ECA1EM101GB	ELECT	25V	1µF	
C1203	ECA1EM471GB	ELECT	25V	470pF	
C1205	ECUV1H471KBX	S.M.CAP	50V	470pF	
C1206	ECUV1H471KBX	S.M.CAP	50V	470pF	
C1207	ECUV1H471KBX	S.M.CAP	50V	470pF	
C1210	ECUV1H473KBX	S.M.CAP	50V	47nF	
C1218	ECA1HM010GB	ELECT	50V	1pF	
C1219	ECUV1H104ZFX	S.M.CAP	50V	100nF	
C1220	ECA0JM101G	ELECT	6.3V	100pF	
C1226	ECUV1H104ZFX	S.M.CAP	50V	100nF	
C1227	ECA1HM101GB	ELECT	50V	100pF	
C1229	ECUV1H470GCG	S.M.CAP	50V	47pF	
C1230	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0Ω
C1232	ECUV1H104ZFX	S.M.CAP	50V	100nF	
C1234	ECUV1H104ZFX	S.M.CAP	50V	100nF	
C1241	ECA1HM101GB	ELECT	50V	100pF	
C1244	ECA1CM100GB	ELECT	16V	10pF	
C1245	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0Ω
C1249	ECUV1H104ZFX	S.M.CAP	50V	100nF	
C1257	ECUV1H561JCX	S.M.CAP	50V	560pF	
C1258	ECA1CM100GB	ELECT	16V	10pF	
C1259	ECUV1H150JCX	S.M.CAP	50V	15pF	
C1260	ECUV1H560JCX	S.M.CAP	50V	56pF	
C1261	ECA1HM101GB	ELECT	50V	100pF	
C1262	ECUV1H390JCX	S.M.CAP	50V	39pF	
C1263	ECUV1H390JCX	S.M.CAP	50V	39pF	
C1264	ECUV1H390JCX	S.M.CAP	50V	39pF	
C1265	ECUV1H560JCX	S.M.CAP	50V	56pF	
C1268	ECA1HM101GB	ELECT	50V	100pF	
C3101	ECUV1H101JCX	S.M.CAP	50V	100pF	
C3102	ECUV1H561KBX	S.M.CAP	50V	560pF	
C3105	ECUV1H101JCX	S.M.CAP	50V	100pF	
C3106	ECA1HM101GB	ELECT	50V	100pF	
C3108	ECEA1CN101	ELECT	16V	100µF	
C3109	ECUV1H561JCX	S.M.CAP	50V	560pF	
C3110	222236516684	FILM	160V	100nF	
C3113	ECUV1H103KBX	S.M.CAP	50V	10nF	
C3115	ECEA1CN100	ELECT	16V	10µF	
C3117	ECUV1H104ZFX	S.M.CAP	50V	100nF	
C3118	ECEA1CN100	ELECT	16V	10µF	
C3119	ECEA1CN100	ELECT	16V	10µF	
C3120	ECA1CM471GB	ELECT	16V	470pF	
C3121	ECA1HM4R7GB	ELECT	50V	4.7µF	

DIODES

D304	1SS355TE-17	DIODE
D306	MTZJT-774.7A	DIODE
D307	MTZJT-774.7A	DIODE
D351	MA165TA5	DIODE 1SS133T-77
D352	MA165TA5	DIODE 1SS133T-77
D353	MA165TA5	DIODE 1SS133T-77
D354	MA165TA5	DIODE 1SS133T-77
D452	ERA15-02V3	DIODE
D453	MA165TA5	DIODE 1SS133T-77
D454	MA165TA5	DIODE 1SS133T-77
D455	MA165TA5	DIODE 1SS133T-77
D503	MA165TA5	DIODE 1SS133T-77
D504	MA165TA5	DIODE 1SS133T-77
D505	1SR124-4AT82	DIODE
D506	MTZJ33B	DIODE
D541	MA165TA5	DIODE 1SS133T-77
D542	MA165TA5	DIODE 1SS133T-77
D551	TVSRH2F-LFB3	DIODE
D552	TVSRU2AMLFA5	DIODE

Ref No.	Part No.	Description			
D553	1SR124-4AT82	DIODE			
D554	1SR124-4AT82	DIODE			
D555	ERA22-02V3	DIODE			
D556	MA165TA5	DIODE 1SS133T-77			
D557	1SR124-4AT82	DIODE			
D801	EMO2BMV0	DIODE			
D802	EMO2BMV0	DIODE			
D803	EMO2BMV0	DIODE			
D804	EMO2BMV0	DIODE			
D808	1SR124-4AT82	DIODE			
D809	1SR124-4AT82	DIODE			
D810	RU3LFA1	DIODE			
D811	1SR124-4AT82	DIODE			
D812	R2KNLFA1	DIODE			
D814	MA165TA5	DIODE 1SS133T-77			
D815	1SR124-4AT82	DIODE			
D816	1SR124-4AT82	DIODE			
D851	TVSRU3AMLFA5	DIODE			
D852	TVSRU2AMV1	DIODE			
D857	MA165TA5	DIODE 1SS133T-77			
D858	MA165TA5	DIODE 1SS133T-77			
D859	MA165TA5	DIODE 1SS133T-77			
D860	MA165TA5	DIODE 1SS133T-77			
D861	MA165TA5	DIODE 1SS133T-77			
D1202	MA170	DIODE			
D1203	SLR56UR3FLF	LED			
D1205	MA170	DIODE			
D1207	MTZJT-778.2A	DIODE			
D1208	MA170	DIODE			
D1209	MTZJT-775.1C	DIODE			
D1211	MA165TA5	DIODE 1SS133T-77			
D1212	MA165TA5	DIODE 1SS133T-77			
D1213	MA165TA5	DIODE 1SS133T-77			
D1214	MA170	DIODE			
D1217	MA165TA5	DIODE 1SS133T-77			
D1218	MA165TA5	DIODE 1SS133T-77			
D1219	MA165TA5	DIODE 1SS133T-77			
D1220	MA165TA5	DIODE 1SS133T-77			
D1221	MA165TA5	DIODE 1SS133T-77			
D1222	MA165TA5	DIODE 1SS133T-77			
D1224	MA165TA5	DIODE 1SS133T-77			
D1301	MTZJT-775.1A	DIODE			
D1311	MA165TA5	DIODE 1SS133T-77			
D3101	MA165TA5	DIODE 1SS133T-77			

FUSES

F801	2153.15H	FUSE	▲
F8011	EYF52BC	FUSE HOLDER	
F8012	EYF52BC	FUSE HOLDER	

TERMINALS AND LINKS

JC1	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0Ω
JC11	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0Ω
JC12	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0Ω
JC14	ERJ8GEY0R00	S.M.CAR	.125W	5%	0Ω
JC20	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0Ω
JC21	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0Ω
JC22	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0Ω
JC23	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0Ω
JC24	ERJ8GEY0R00	S.M.CAR	.125W	5%	0Ω
JC25	ERJ8GEY0R00	S.M.CAR	.125W	5%	0Ω
JC26	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0Ω
JC27	ERJ8GEY0R00	S.M.CAR	.125W	5%	0Ω
JC28	ERJ8GEY0R00	S.M.CAR	.125W	5%	0Ω
JC3	ERJ6GEYJ222	S.M.CARB	0.1W	5%	2K2Ω
JC30	ERJ8GEYJ101	S.M.CAR	.125W	5%	100Ω
JC31	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0Ω
JC35	ERJ8GEY0R00	S.M.CAR	.125W	5%	0Ω
JC7	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0Ω
JC8	ERJ8GEY0R00	S.M.CAR	.125W	5%	0Ω
JEEK	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0Ω
JEFK	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0Ω
JEJK	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0Ω
JEPK	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0Ω
JEXK	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0Ω
JEZK	ERJ6GEY0R00	S.M.CARB	0.1W	5%	0Ω
JK3102	TJB16663	A.V.TERMINAL			

Ref No.	Part No.	Description
J208	EXCELSA39V	COIL
J321	EXCELSA35V	COIL
COILS		
L451	EXCELSA35T	COIL
L801	ELF18D281A	COIL
L803	EXCELSA35T	COIL
L804	EXCELD35V	COIL
L851	EXCELSA35T	COIL
L852	EXCELSA35T	COIL
L1201	EXCELSA35T	COIL
L1203	TLTACT100K	COIL
L1204	ELJNA6R8GF	COIL
L1207	TLTACT100K	COIL
L1208	TLTACT100K	COIL
L1209	EXCELSA35T	COIL
TRANSISTORS		
Q102	BC847B	TRANSISTOR OR 2SD601ATX
Q201	BC847B	TRANSISTOR OR 2SD601ATX
Q202	BC847B	TRANSISTOR OR 2SD601ATX
Q251	BC847B	TRANSISTOR OR 2SD601ATX
Q252	BC857B	TRANSISTOR OR 2SB709ATX
Q253	BC847B	TRANSISTOR OR 2SD601ATX
Q303	BC847B	TRANSISTOR OR 2SD601ATX
Q354	BC857B	TRANSISTOR OR 2SB709ATX
Q453	BC847B	TRANSISTOR OR 2SD601ATX
Q454	BC847B	TRANSISTOR OR 2SD601ATX
Q501	2SD2398-M2	TRANSISTOR
Q502	BC857B	TRANSISTOR OR 2SB709ATX
Q503	BC847B	TRANSISTOR OR 2SD601ATX
Q504	BC847B	TRANSISTOR OR 2SD601ATX
Q551	BU2506DFRB	TRANSISTOR
Q801	BC847B	TRANSISTOR OR 2SD601ATX
Q802	2SD965-R	TRANSISTOR
Q1202	BC847B	TRANSISTOR OR 2SD601ATX
Q1203	BC847B	TRANSISTOR OR 2SD601ATX
Q1204	2SC1317-TA	TRANSISTOR
Q1205	BC847B	TRANSISTOR OR 2SD601ATX
Q1207	BC847B	TRANSISTOR OR 2SD601ATX
Q1208	BC847B	TRANSISTOR OR 2SD601ATX
Q1209	BC847B	TRANSISTOR OR 2SD601ATX
Q1210	BC857B	TRANSISTOR OR 2SB709ATX
Q1211	BC857B	TRANSISTOR OR 2SB709ATX
Q1212	BC847B	TRANSISTOR OR 2SD601ATX
Q1213	BC847B	TRANSISTOR OR 2SD601ATX
Q1295	BC857B	TRANSISTOR OR 2SB709ATX
Q1296	BC847B	TRANSISTOR OR 2SD601ATX
Q3101	2SC1318-S	TRANSISTOR
Q3102	BC847B	TRANSISTOR OR 2SD601ATX
Q3105	BC857B	TRANSISTOR OR 2SB709ATX
Q3106	BC857B	TRANSISTOR OR 2SB709ATX
Q3107	BC857B	TRANSISTOR OR 2SB709ATX
Q3108	BC857B	TRANSISTOR OR 2SB709ATX
RESISTOR		
RL1201	TSE1885-1	RELAY
R107	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0Ω
R114	ERJ6GEYJ123	S.M.CARB 0.1W 5% 12KΩ
R203	ERJ6GEYJ122	S.M.CARB 0.1W 5% 1K2Ω
R205	ERJ6GEYJ112	SM.CARB0.125W 5% 1.1KΩ
R206	ERJ6GEYJ222	S.M.CARB 0.1W 5% 2K2Ω
R221	ERJ6GEYJ221	S.M.CARB 0.1W 5% 220Ω
R224	ERJ6GEYJ114	S.M.CARB 0.1W 5% 110KΩ
R225	ERJ6GEYJ393	S.M.CARB 0.1W 5% 39KΩ
R251	ERJ6GEYJ3R3	S.M.CARB 0.1W 5% 3R3Ω
R252	ERJ6GEYJ562	S.M.CARB 0.1W 5% 5K6Ω
R254	ERJ6GEYJ121	S.M.CARB 0.1W 5% 120Ω
R255	ERJ6GEYJ181	S.M.CARB 0.1W 5% 180Ω
R256	ERJ6GEYJ104	S.M.CARB 0.1W 5% 100KΩ
R257	ERQ1CJP120	METAL 1W 5% 12Ω
R259	ERJ6GEYJ331	S.M.CARB 0.1W 5% 330Ω
R260	ERJ6GEYJ332	S.M.CARB 0.1W 5% 3K3Ω
R261	ERJ6GEYJ682	S.M.CARB 0.1W 5% 6K8Ω
R262	ERJ6GEYF104V	SM.CARB0.125W 1% 100KΩ

Ref No.	Part No.	Description
R263	ERJ6GEYF622V	SM.CARB0.125W 1% 6.2KΩ
R264	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10KΩ
R301	ERJ6GEYJ102	S.M.CARB 0.1W 5% 1KΩ
R302	ERJ6GEYJ102	S.M.CARB 0.1W 5% 1KΩ
R303	ERJ6GEYJ222	S.M.CARB 0.1W 5% 2K2Ω
R304	ERJ6ENF2201	SM.CARB0.125W 5% 200Ω
R317	ERJ6GEYJ102	S.M.CARB 0.1W 5% 1KΩ
R318	ERJ6GEYJ102	S.M.CARB 0.1W 5% 1KΩ
R319	ERJ6GEYJ102	S.M.CARB 0.1W 5% 1KΩ
R320	ERJ6GEYJ101	S.M.CARB 0.1W 5% 100Ω
R372	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10KΩ
R373	ERJ6GEYJ391	S.M.CARB 0.1W 5% 390Ω
R374	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10KΩ
R401	ERJ6ENF9100	SM.CARB0.125W 5% 10Ω
R402	ERJ6ENF8201	SM.CARB0.125W 5% 200Ω
R403	ERJ6ENF6801	SM.CARB0.125W 5% 800Ω
R451	ERDS1TJ331	CARBON 0.5W 5% 330Ω
R452	ERJ6GEYJ1R0	SM.CARB0.125W 5% 1R0Ω
R454	ERJ6GEYF153V	SM.CARB0.125W 1% 15KΩ
R456	ERO25CKF5601	METAL 0.25W 1% 5K6Ω
R457	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10KΩ
R458	ERD25TJ683	CARBON 0.25W 5% 68KΩ
R459	ERJ6GEYJ332	S.M.CARB 0.1W 5% 3K3Ω
R460	ERJ6GEYJ473	S.M.CARB 0.1W 5% 47KΩ
R461	ERJ6GEYJ473	S.M.CARB 0.1W 5% 47KΩ
R462	ERJ6GEYJ473	S.M.CARB 0.1W 5% 47KΩ
R501	ERJ6GEYJ391	S.M.CARB 0.1W 5% 390Ω
R502	ERJ6GEYJ681	S.M.CARB 0.1W 5% 680Ω
R503	ERG3SJS101	METAL 3W 5% 10Ω
R504	ERG2ANJ471	METAL 2W 5% 470Ω
R505	ERJ6GEYJ433	SM.CARB0.125W 5% 43KΩ
R510	ERJ6GEYJ561	S.M.CARB 0.1W 5% 560Ω
R511	ERJ6GEYJ334	S.M.CARB 0.1W 5% 330KΩ
R512	ERJ6GEYJ152	S.M.CARB 0.1W 5% 1K5Ω
R513	ERJ6GEYJ471	S.M.CARB 0.1W 5% 470Ω
R514	ERJ6GEYJ152	S.M.CARB 0.1W 5% 1K5Ω
R515	ERJ6GEYJ102	S.M.CARB 0.1W 5% 1KΩ
R516	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10KΩ
R518	ERJ6ENF1302	SM.CARB0.125W 5% 3.0KΩ
R520	ERJ6GEYJ334	S.M.CARB 0.1W 5% 330KΩ
R521	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10KΩ
R541	ERJ6GEYJ332	S.M.CARB 0.1W 5% 3K3Ω
R601	ERJ6GEYJ332	S.M.CARB 0.1W 5% 3K3Ω
R602	ERJ6GEYJ222	S.M.CARB 0.1W 5% 2K2Ω
R603	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10KΩ
R604	ERJ6GEYJ472	S.M.CARB 0.1W 5% 4K7Ω
R605	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10KΩ
R606	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10KΩ
R611	ERJ6GEYOR00	S.M.CARB 0.1W 5% 0Ω
R612	ERJ6GEYOR00	S.M.CARB 0.1W 5% 0Ω
R613	ERJ6GEYJ395	SM.CARB0.125W 5% 3M9Ω
R614	ERJ6GEYJ223	S.M.CARB 0.1W 5% 22KΩ
R801	ERF5ZK2R7	WOUND 5W 20% 2R7Ω
R804	ERDS1TJ224	CARBON 0.5W 5% 220KΩ
R805	ERW2PKR33	WIRE 2W 10% R33Ω
R806	ERJ6GEYJ102	S.M.CARB 0.1W 5% 1KΩ
R807	ERG2ANJ101	METAL 2W 5% 100Ω
R808	ERG12SJ561P	METAL 12W 5% 560Ω
R809	ERG2ANJP560H	METAL 2W 5% 56Ω
R810	ERQ12HJ100	METAL 0.5W 5% 10Ω
R811	ERDS1TJ224	CARBON 0.5W 5% 220KΩ
R813	ERJ6GEYJ202	SM.CARB0.125W 5% 2KΩ
R814	ERD75TAJ825	CARBON 0.75W 5% 8M2Ω
R819	ERDS1TJ104	CARBON 0.5W 5% 100KΩ
R853	ERG2ANJ680	METAL 2W 5% 68Ω
R857	ERJ6GEYJ102	S.M.CARB 0.1W 5% 1KΩ
R858	ERJ6GEYJ102	S.M.CARB 0.1W 5% 1KΩ
R859	ERJ6GEYJ102	S.M.CARB 0.1W 5% 1KΩ
R860	ERJ6GEYJ102	S.M.CARB 0.1W 5% 1KΩ
R861	ERJ6GEYOR00	S.M.CARB 0.1W 5% 0Ω
R1201	ERQ1CJP2R2	FUSIBLE 1W 5% 2R2Ω
R1202	ERJ6GEYJ562	S.M.CARB 0.1W 5% 5K6Ω
R1203	ERJ6GEYJ562	S.M.CARB 0.1W 5% 5K6Ω
R1204	ERJ6GEYJ562	S.M.CARB 0.1W 5% 5K6Ω
R1205	ERJ6GEYJ562	S.M.CARB 0.1W 5% 5K6Ω
R1206	ERJ6GEYJ562	S.M.CARB 0.1W 5% 5K6Ω
R1208	ERJ6GEYJ101	S.M.CARB 0.1W 5% 100Ω
R1211	ERJ6GEYJ101	S.M.CARB 0.1W 5% 100Ω
R1215	ERJ6GEYOR00	S.M.CARB 0.1W 5% 0Ω
R1216	ERJ6GEYOR00	S.M.CARB 0.1W 5% 0Ω
R1219	ERJ6GEYJ562	S.M.CARB 0.1W 5% 5K6Ω

TC-21S3M/TC-14S3M

Ref No.	Part No.	Description
R1220	ERJ6GEYJ472	S.M.CARB 0.1W 5% 4K7Ω
R1221	ERJ6GEYJ271	S.M.CARB 0.1W 5% 270Ω
R1222	ERJ6GEYJ330	S.M.CARB 0.1W 5% 33Ω
R1227	ERJ6GEYJ101	S.M.CARB 0.1W 5% 100Ω
R1228	ERJ6GEYJ101	S.M.CARB 0.1W 5% 100Ω
R1229	ERJ6GEYJ101	S.M.CARB 0.1W 5% 100Ω
R1230	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10KΩ
R1232	ERJ6GEYJ562	S.M.CARB 0.1W 5% 5K6Ω
R1233	ERJ6GEYJ562	S.M.CARB 0.1W 5% 5K6Ω
R1235	ERJ6GEYJ152	S.M.CARB 0.1W 5% 1K5Ω
R1236	ERJ6GEYJ223	S.M.CARB 0.1W 5% 22KΩ
R1237	ERJ6GEYJ222	S.M.CARB 0.1W 5% 2K2Ω
R1238	ERJ6GEYJ101	S.M.CARB 0.1W 5% 100Ω
R1239	ERJ6GEYJ101	S.M.CARB 0.1W 5% 100Ω
R1240	ERJ6GEYJ101	S.M.CARB 0.1W 5% 100Ω
R1242	ERJ6GEYOR00	S.M.CARB 0.1W 5% 0Ω
R1243	ERJ6GEYJ101	S.M.CARB 0.1W 5% 100Ω
R1244	ERJ6GEYJ101	S.M.CARB 0.1W 5% 100Ω
R1246	ERD25TJ272	CARBON 0.25W 5% 2K7Ω
R1247	ERD25TJ221	CARBON 0.25W 5% 220Ω
R1248	ERJ6GEYJ223	S.M.CARB 0.1W 5% 22KΩ
R1249	ERDS1TJ121	CARBON 0.5W 5% 120Ω
R1250	ERDS1TJ560	CARBON 0.5W 5% 56Ω
R1253	ERJ6GEYJ393	S.M.CARB 0.1W 5% 39KΩ
R1255	ERJ6GEYJ102	S.M.CARB 0.1W 5% 1KΩ
R1258	ERJ6GEYOR00	S.M.CARB 0.1W 5% 0Ω
R1259	ERJ6GEYJ102	S.M.CARB 0.1W 5% 1KΩ
R1261	ERJ6GEYJ122	S.M.CARB 0.1W 5% 1K2Ω
R1263	ERJ6GEYJ122	S.M.CARB 0.1W 5% 1K2Ω
R1265	ERJ6GEYJ122	S.M.CARB 0.1W 5% 1K2Ω
R1266	ERJ6GEYJ102	S.M.CARB 0.1W 5% 1KΩ
R1268	ERJ6GEYJ101	S.M.CARB 0.1W 5% 100Ω
R1269	ERJ6GEYJ101	S.M.CARB 0.1W 5% 100Ω
R1270	ERJ6GEYJ101	S.M.CARB 0.1W 5% 100Ω
R1271	ERJ6GEYJ101	S.M.CARB 0.1W 5% 100Ω
R1272	ERJ6GEYJ101	S.M.CARB 0.1W 5% 100Ω
R1273	ERJ6GEYJ333	S.M.CARB 0.1W 5% 33KΩ
R1274	ERJ6GEYJ104	S.M.CARB 0.1W 5% 100KΩ
R1275	ERJ6GEYOR00	S.M.CARB 0.1W 5% 0Ω
R1276	ERJ6GEYJ102	S.M.CARB 0.1W 5% 1KΩ
R1282	ERJ6GEYJ102	S.M.CARB 0.1W 5% 1KΩ
R1283	ERJ6GEYJ102	S.M.CARB 0.1W 5% 1KΩ
R1284	ERJ6GEYJ102	S.M.CARB 0.1W 5% 1KΩ
R1285	ERJ6GEYJ222	S.M.CARB 0.1W 5% 2K2Ω
R1286	ERJ6GEYJ222	S.M.CARB 0.1W 5% 2K2Ω
R1287	ERJ6GEYJ222	S.M.CARB 0.1W 5% 2K2Ω
R1288	ERJ6GEYJ222	S.M.CARB 0.1W 5% 2K2Ω
R1289	ERJ6GEYJ562	S.M.CARB 0.1W 5% 5K6Ω
R1291	ERJ6GEYJ432	S.M.CARB 0.1W 5% 4K3Ω
R1293	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10KΩ
R1294	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10KΩ
R1295	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10KΩ
R1296	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10KΩ
R1298	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10KΩ
R1303	ERJ6GEYJ102	S.M.CARB 0.1W 5% 1KΩ
R1309	ERJ6GEYJ562	S.M.CARB 0.1W 5% 5K6Ω
R1311	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10KΩ

Ref No.	Part No.	Description
R3101	ERJ6GEYJ562	S.M.CARB 0.1W 5% 5K6Ω
R3102	ERJ6GEYJ562	S.M.CARB 0.1W 5% 5K6Ω
R3105	ERJ6GEYJ750	S.M.CARB 0.1W 5% 75Ω
R3106	ERJ6GEYJ750	S.M.CARB 0.1W 5% 75Ω
R3107	ERJ6GEYJ750	S.M.CARB 0.1W 5% 75Ω
R3108	ERJ6GEYJ750	S.M.CARB 0.1W 5% 75Ω
R3109	ERJ6GEYJ221	S.M.CARB 0.1W 5% 220Ω
R3110	ERJ6GEYJ222	S.M.CARB 0.1W 5% 2K2Ω
R3111	ERJ6GEYJ101	S.M.CARB 0.1W 5% 100Ω
R3112	ERJ6GEYJ123	S.M.CARB 0.1W 5% 12KΩ
R3113	ERJ6GEYJ912	SM.CARB0.125W 5% 9K1Ω
R3114	ERJ6GEYJ101	S.M.CARB 0.1W 5% 100Ω
R3115	ERDS1TJ750	CARBON 0.5W 5% 75Ω
R3116	ERJ6GEYJ183	S.M.CARB 0.1W 5% 18KΩ
R3117	ERJ6GEYJ822	S.M.CARB 0.1W 5% 8K2Ω
R3118	ERJ6GEYJ102	S.M.CARB 0.1W 5% 1KΩ
R3119	ERJ6GEYJ102	S.M.CARB 0.1W 5% 1KΩ
R3120	ERJ6GEYJ750	S.M.CARB 0.1W 5% 75Ω
R3121	ERJ6GEYJ562	S.M.CARB 0.1W 5% 5K6Ω
R3122	ERJ6GEYJ221	S.M.CARB 0.1W 5% 220Ω
R3123	ERJ6GEYJ221	S.M.CARB 0.1W 5% 220Ω
R3124	ERJ6GEYJ221	S.M.CARB 0.1W 5% 220Ω
R3125	ERJ6GEYOR00	S.M.CARB 0.1W 5% 0Ω
R3126	ERJ6GEYJ153	S.M.CARB 0.1W 5% 15KΩ
R3131	ERJ6GEYJ242	S.M.CARB 0.1W 5% 2K4Ω
R3132	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10KΩ
R3133	ERJ6GEYJ223	S.M.CARB 0.1W 5% 22KΩ
R3134	ERJ6GEYJ102	S.M.CARB 0.1W 5% 1KΩ
R3136	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10KΩ
R3137	ERJ6GEYJ223	S.M.CARB 0.1W 5% 22KΩ
R3138	ERJ6GEYJ102	S.M.CARB 0.1W 5% 1KΩ
R3140	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10KΩ
R3141	ERJ6GEYJ223	S.M.CARB 0.1W 5% 22KΩ
R3142	ERJ6GEYJ102	S.M.CARB 0.1W 5% 1KΩ
R3143	ERJ6GEYJ181	S.M.CARB 0.1W 5% 180Ω

SWITCHES

S801	ESB91232A	SWITCH
S1202	EVQ23405R	SWITCH
S1203	EVQ23405R	SWITCH
S1204	EVQ23405R	SWITCH



TRANSFORMERS

T551	ETH19Z169AZ	TRANSFORMER
T1201	ETP35KAN617U	TRANSFORMER

FILTERS

X303	TAFCSB503F6	FILTER
X601	LN-P-01S	CRYSTAL
X1201	CSA18.00MXZ	CRYSTAL

DIFFERENCES FOR MODEL TC - 21S3M

Ref No.	Part No.	Description	
MISCELLANEOUS COMPONENTS			
1)	TNP8EY011AF	Y P.C.B.	△
2)	THT1009R	CRT FIXING SCREW	
3)	A51EFS83X191	CRT	△
4)	TKY8E029-1	CABINET	△
5)	TBX8E038	POWER BUTTON	
7)	TSX8E0017	POWER CORD	△
8)	TBM8E1790	MODEL LABEL	
9)	TKU8E00233	BACK COVER	△
10)	TLK8E05133	DEGAUSS COIL	△
11)	EASG12D546A2	SPEAKER	
12)	TMZ8E001	CHASSIS RAIL (RIGHT)	
13)	TNP8EE007AV	E P.C.B.	△
14)	TMZ8E002	CHASSIS RAIL (LEFT)	
	TBM8E1726	PANASONIC BADGE	
	TPC8E4665	OUTER CARTON	
	TPD8E576	TOP CUSHION	
	TPD8E577	BOTTOM CUSHION	
CAPACITORS			
C351	ECUV1H221JCX	S.M.CAP 50V 220pF	
C352	ECUV1H271JCX	S.M.CAP 50V 270pF	
C353	ECUV1H221JCX	S.M.CAP 50V 220pF	
C369	ECA1HMR47GB	ELECT 50V 0.47 μ F	
C453	ECEA1HGE101	ELECT 50V 100 μ F	
C454	ECEA1HGE2R2	ELECT 50V 2R2 μ F	
C508	ECUV1H102JCX	S.M.CAP 50V 1nF	
C551	ECWH12H103J	FILM 1250V 10nF	△
C552	ECQM4333JC	FILM 400V 33nF	
C554	ECKC3D681J	CERAMIC 2KV 680pF	△
C557	ECWF2H394JZ	CERAMIC 500V 390nF	△
C558	ECEA2CU4R7	ELECT 160V 4.7 μ F	
C567	ECEA1VGE471	ELECT 35V 470 μ F	
C811	ECEA1JGE100	ELECT 63V 10 μ F	
C1228	ECUV1H470GCG	S.M.CAP 50V 47pF	
DIODES			
D805	232266296706	THERMISTOR	
INTEGRATED CIRCUITS			
IC1205	XL24C02P-CAC	EAROM	
COILS			
L551	ELH5L429	COIL	

Ref No.	Part No.	Description	
TRANSISTORS			
Q351	2SC4714RL2	TRANSISTOR	
Q352	2SC4714RL2	TRANSISTOR	
Q353	2SC4714RL2	TRANSISTOR	
Q507	BC847B	TRANSISTOR OR 2SD601ATX	
RESISTOR			
R305	ERJ6GEYJ271	S.M.CARB 0.1W 5% 270 Ω	
R306	ERJ6GEYJ271	S.M.CARB 0.1W 5% 270 Ω	
R307	ERJ6GEYJ271	S.M.CARB 0.1W 5% 270 Ω	
R351	ERG2ANJ103	METAL 2W 5% 10K Ω	
R352	ERG2ANJ103	METAL 2W 5% 10K Ω	
R353	ERG2ANJ103	METAL 2W 5% 10K Ω	
R366	ERJ6GEYJ361	S.M.CARB 0.125W 5% 360 Ω	
R367	ERJ6GEYJ391	S.M.CARB 0.1W 5% 390 Ω	
R368	ERJ6GEYJ391	S.M.CARB 0.1W 5% 390 Ω	
R369	ERJ6GEYJ472	S.M.CARB 0.1W 5% 4K7 Ω	
R370	ERJ6GEYJ472	S.M.CARB 0.1W 5% 4K7 Ω	
R371	ERJ6GEYJ472	S.M.CARB 0.1W 5% 4K7 Ω	
R375	ERDS1TJ272	CARBON 0.5W 5% 2K7 Ω	
R378	ERD25TJ274	CARBON 0.25W 5% 270K Ω	
R379	ERJ6GEYJ183	S.M.CARB 0.1W 5% 18K Ω	
R380	ERJ6GEYJ684	S.M.CARB 0.1W 5% 680K Ω	
R386	ERDS1TJ272	CARBON 0.5W 5% 2K7 Ω	
R387	ERDS1TJ272	CARBON 0.5W 5% 2K7 Ω	
R453	ERDS1TJ1R0	CARBON 0.5W 5% 1 Ω	
R506	ERJ6GEYJ153	S.M.CARB 0.1W 5% 15K Ω	
R508	ERJ6GEYJ153	S.M.CARB 0.1W 5% 15K Ω	
R519	ERJ6GEYJ473	S.M.CARB 0.1W 5% 47K Ω	
R522	ERJ6GEYJ684	S.M.CARB 0.1W 5% 680K Ω	
R523	ERJ6GEYJ154	S.M.CARB 0.1W 5% 150K Ω	
R524	ERJ6GEYJ184	S.M.CARB 0.1W 5% 180K Ω	
R525	ERJ6GEYJ184	S.M.CARB 0.1W 5% 180K Ω	
R542	ERJ6GEYJ332	S.M.CARB 0.1W 5% 3K3 Ω	
R543	ERJ6GEYJ222	S.M.CARB 0.1W 5% 2K2 Ω	
R553	ERQ1CJP102	METAL 1W 5% 1K Ω	△
R555	FL84252R0J	RESISTOR 42W 5% 2 Ω	
R557	ERJ6GEYJ103	S.M.CARB 0.1W 5% 10K Ω	
R560	ERDS1TJ224	CARBON 0.5W 5% 220K Ω	
R1217	ERJ6ENF7501	S.M.CARB 0.1W 1% 7K5 Ω	
R1218	ERO50PKF5603	METAL 50W 1% 560K Ω	△
R1252	ERJ6GEYJ101	S.M.CARB 0.1W 5% 100 Ω	
SWITCHES			
S351	TJSC00300	CRT SOCKET	
TRANSFORMERS			
T552	ZTFK33005A	F.B.T.	△
T801	ETS29AK227AC	TRANSFORMER	

DIFFERENCES FOR MODEL TC - 14S3M

Ref No.	Part No.	Description	
MISCELLANEOUS COMPONENTS			
1)	TNP8EY011AB	Y P.C.B.	△
2)	THE492-4	CRT FIXING SCREW	
3)	A34EAC01X13	C.R.T.	△
4)	TKY8E036-A	CABINET	△
5)	TBX8E018	POWER BUTTON	
7)	TSX8E0018	POWER CORD	△
8)	TBM8E1789	MODEL LABEL	
9)	TKU8E00251	REAR COVER	△
10)	TLK8E05134	DEGAUSS COIL	△
11)	EASG9D541B2	SPEAKER	
13)	TNP8EE007BA	E P.C.B.	△
	TBM8E1727	PANASONIC BADGE	
	TPC8E4664	OUTER CARTON	
	TPD8E578	TOP CUSHION	
	TPD8E579	BOTTOM CUSHION	
CAPACITORS			
C351	ECUV1H151JCX	S.M.CAP 50V 150pF	
C352	ECUV1H151JCX	S.M.CAP 50V 150pF	
C353	ECUV1H181JCX	S.M.CAP 50V 180pF	
C453	ECEA1HU101	ELECT 50V 100μF	
C454	ECA1HM2R2GB	ELECT 50V 2.2μF	
C551	ECWH12H822J	CERAMIC 1250V 8.2nF	△
C552	ECQE6104K	FILM 600V 100nF	△
C554	ECKC3D331J	CERAMIC 2KV 330pF	△
C556	ECEA2CGR47	ELECT 160V 0.47μF	
C557	ECWF2H474J	FILM 500V 470nF	△
C558	ECEA2CG010	ELECT 160V 1μF	
C567	ECA1VM471GB	ELECT 35V 470pF	
C811	ECA1JM100GB	ELECT 63V 10pF	
C1228	ECUV1H560GCG	S.M.CAP 50V 56pF	
DIODES			
D805	232266296319	THERMISTOR	
INTEGRATED CIRCUITS			
IC1205	XL24C02P-CAB	EAROM	
TERMINALS AND LINKS			
JYAK	ERJ6GEY0R00	S.M.CARB 0.1W 5% 0Ω	

Ref No.	Part No.	Description	
COILS			
L552	ELC08D055	COIL	
TRANSISTORS			
Q351	2SC1473-RN	TRANSISTOR	
Q352	2SC1473-RN	TRANSISTOR	
Q353	2SC1473-RN	TRANSISTOR	
RESISTOR			
R305	ERJ6GEYJ471	S.M.CARB 0.1W 5% 470Ω	
R306	ERJ6GEYJ471	S.M.CARB 0.1W 5% 470Ω	
R307	ERJ6GEYJ471	S.M.CARB 0.1W 5% 470Ω	
R351	ERG1SJ123	METAL 1W 5% 12KΩ	
R352	ERG1SJ123	METAL 1W 5% 12KΩ	
R353	ERG1SJ123	METAL 1W 5% 12KΩ	
R366	ERJ6GEYJ561	S.M.CARB 0.1W 5% 560Ω	
R367	ERJ6GEYJ681	S.M.CARB 0.1W 5% 680Ω	
R368	ERJ6GEYJ681	S.M.CARB 0.1W 5% 680Ω	
R369	ERJ6GEYJ682	S.M.CARB 0.1W 5% 6K8Ω	
R370	ERJ6GEYJ682	S.M.CARB 0.1W 5% 6K8Ω	
R371	ERJ6GEYJ682	S.M.CARB 0.1W 5% 6K8Ω	
R375	ERDS1TJ182	CARBON 0.5W 5% 1K8Ω	
R386	ERDS1TJ182	CARBON 0.5W 5% 1K8Ω	
R387	ERDS1TJ182	CARBON 0.5W 5% 1K8Ω	
R453	ERDS1TJ1R5	CARBON 0.5W 5% 1R5Ω	
R506	ERJ6GEYJ753	S.M.CARB 0.1W 5% 75KΩ	
R508	ERJ6GEYJ753	S.M.CARB 0.1W 5% 75KΩ	
R519	ERJ6GEYJ754	S.M.CARB 0.1W 5% 750KΩ	
R522	ERJ6GEYJ394	S.M.CARB 0.1W 5% 390KΩ	
R542	ERJ6GEYJ242	S.M.CARB 0.1W 5% 2K4Ω	
R543	ERJ6GEYJ682	S.M.CARB 0.1W 5% 6K8Ω	
R551	ERDS1TJ1R5	CARBON 0.5W 5% 1R5Ω	
R552	ERDS1TJ1R5	CARBON 0.5W 5% 1R5Ω	
R554	ERQ14AJW151	FUSIBLE 14W 5% 150Ω	△
R555	ERQ12HKR22	FUSIBLE 0.5W 5% R22Ω	△
R557	ERJ6GEYJ562	S.M.CARB 0.1W 5% 5K6Ω	
R560	ERDS1TJ304	CARBON 0.5W 5% 300KΩ	
R1217	ERJ6ENF1202	S.M.CARB 0.1W 1% 1K2Ω	
R1218	ERO50PKF6203	METAL 50W 1% 620KΩ	△
R1252	ERJ6GEYJ562	S.M.CARB 0.1W 5% 5K6Ω	
SWITCHES			
S351	0330660069	CRT SOCKET	
TRANSFORMERS			
T552	ZTFK33004A	F.B.T.	△
T801	ETS29AK237AC	TRANSFORMER	△

SCHEMATIC DIAGRAM FOR MODELS TC-21S3M / TC-14S3M (Z-7 CHASSIS)

IMPORTANT SAFETY NOTICE

Components identified by  mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

1. **RESISTOR**
All resistors are carbon 1/4W resistor, unless marked. Unit of resistance is OHM (Ω) (K=1,000, M=1,000,000).

 : Nonflammable	 : Metal Oxide
 : Metal Film	 : Fuse
 : Wire Wound	 : Solid
2. **CAPACITOR**
All capacitors are ceramic 50V capacitors, unless marked as follows: Unit of capacitance is μ F, unless otherwise stated.

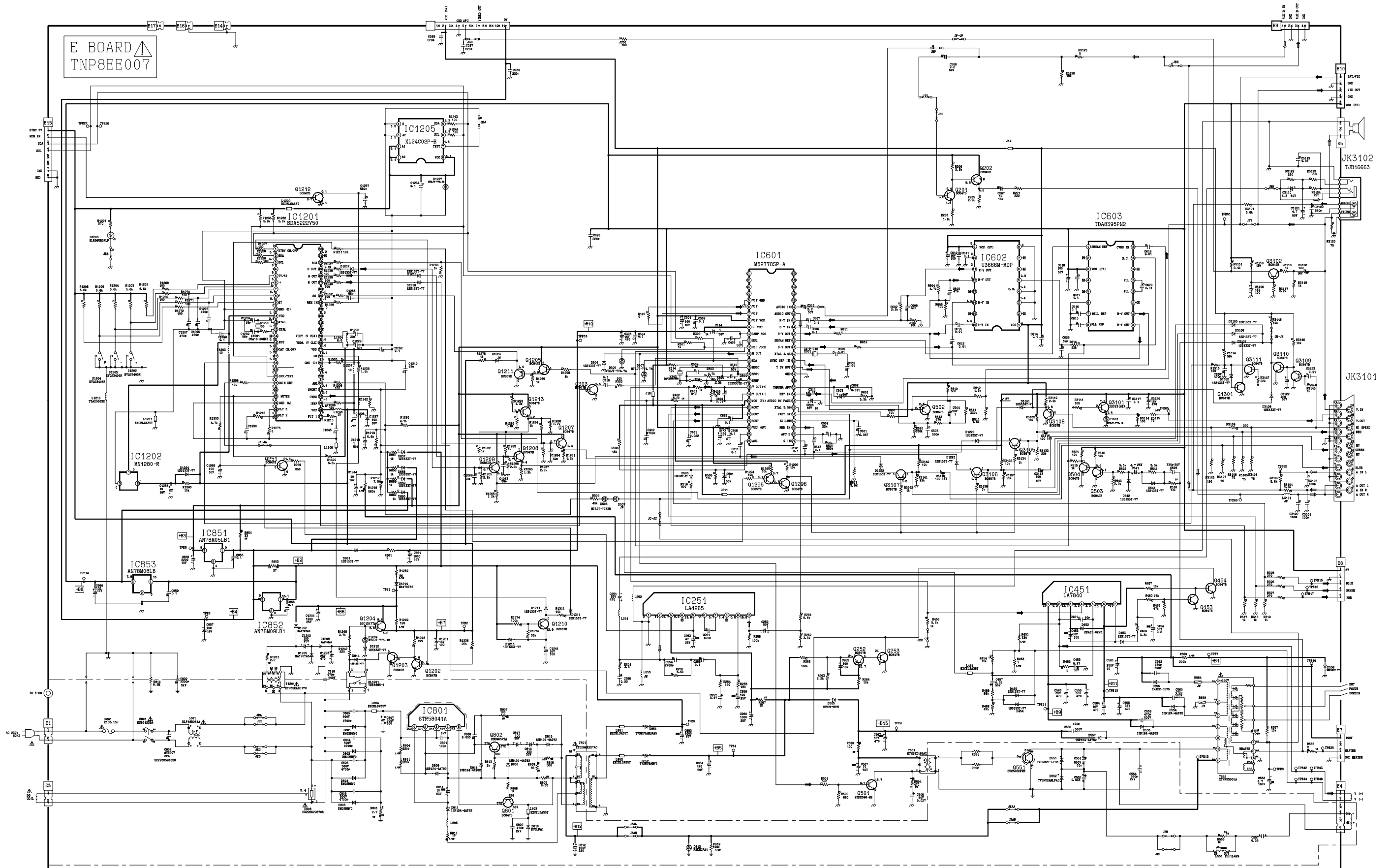
 : Temperature Compensation	 : Polyester
 : Polypropylene	 : Dipped Tantalum
 : Electrolytic	 : Bipolar
 : Metallised Polyester	 : Z-Type
3. **COIL**
Unit of inductance is μ H, unless otherwise stated.
4. **TEST POINT**
 Test Point position
5. **EARTH SYMBOL**

 Chassis Earth (COLD)	 Line Earth (HOT)
--	--
6. **VOLTAGE MEASUREMENT**
Voltage is measured by a DC voltmeter. Measurement conditions are as follows:
Power source AC 220 / 240V, 50Hz
Receiving Signal Colour Bar signal (RF)
All customer controls Maximum position
7.  Indicates the Video signal path
 Indicates the Audio signal path
 Indicates the Vertical/Horizontal signal path
8. This schematic diagram is the latest at the time of printing and is subject to change without notice.

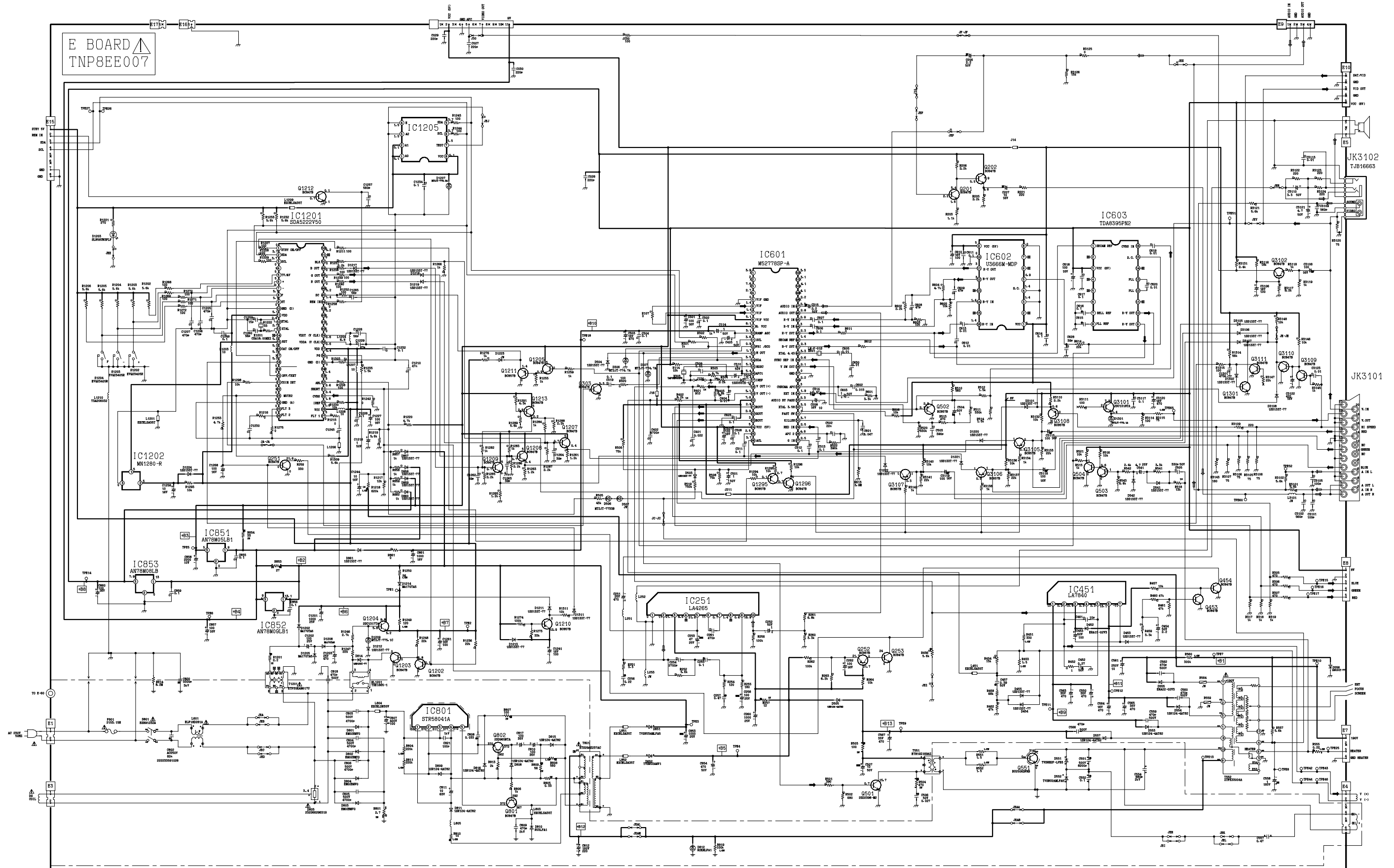
Remarks:

1. Care must be taken when servicing this receiver, as it uses a HOT chassis. The circuit is defined by HOT and COLD indications in the schematic diagram. Take the following precautions. All circuits except the Audio, Video input circuits are HOT.
2. **Precautions**
 - e. Do not touch the HOT part, or the HOT and COLD parts of the chassis, at the same time, as you are liable to a shock hazard.
 - f. Do not short-circuit the HOT and COLD circuits as electrical components may be damaged.
 - g. Do not connect an instrument, such as an oscilloscope, to the HOT and COLD circuits simultaneously, as this may cause fuse failure. Connect the earth of the instruments to the earth connection of the circuit being measured.
 - h. Make sure to disconnect the power plug before removing the chassis.

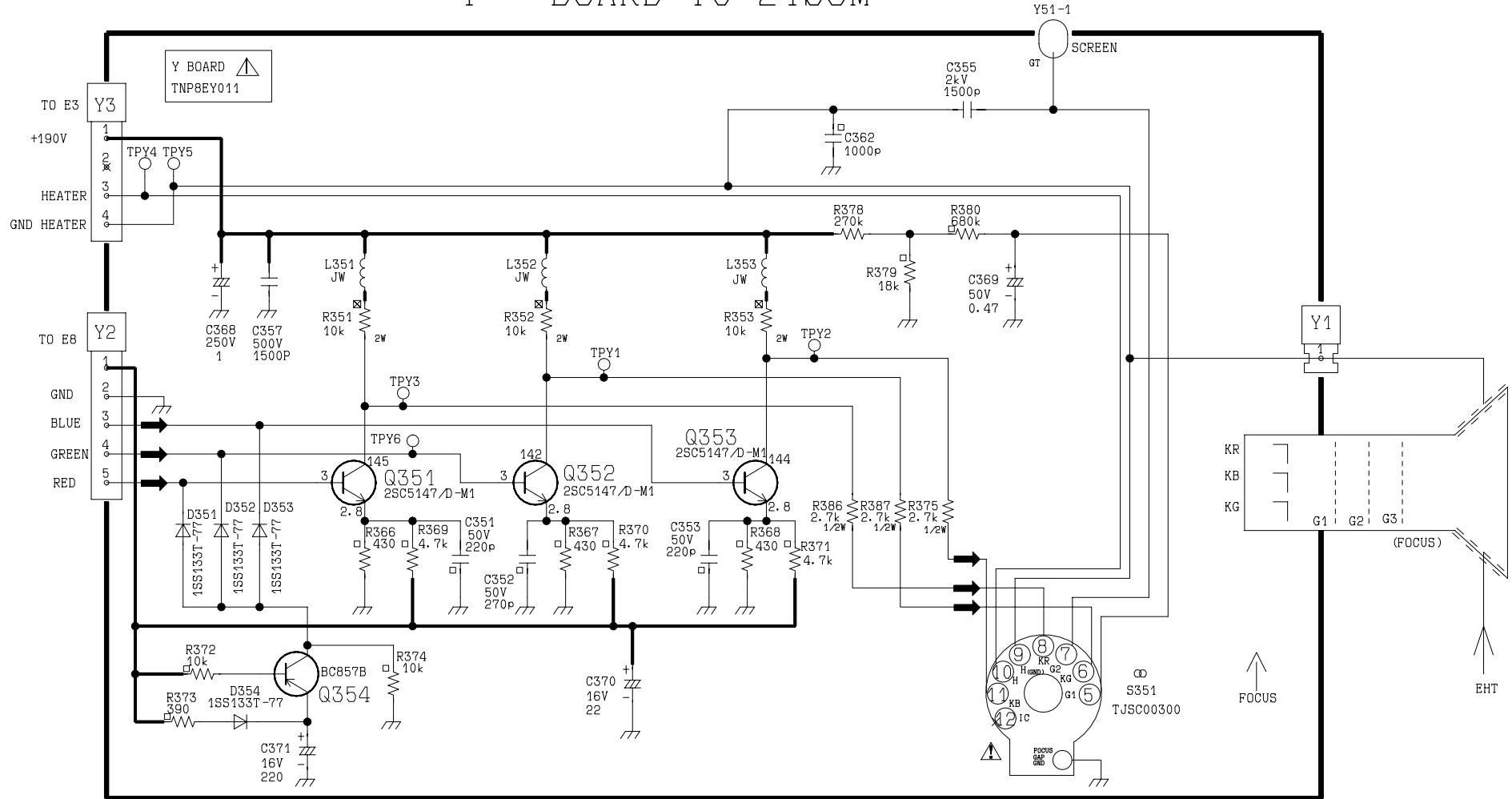
E - BOARD TC-21S3M



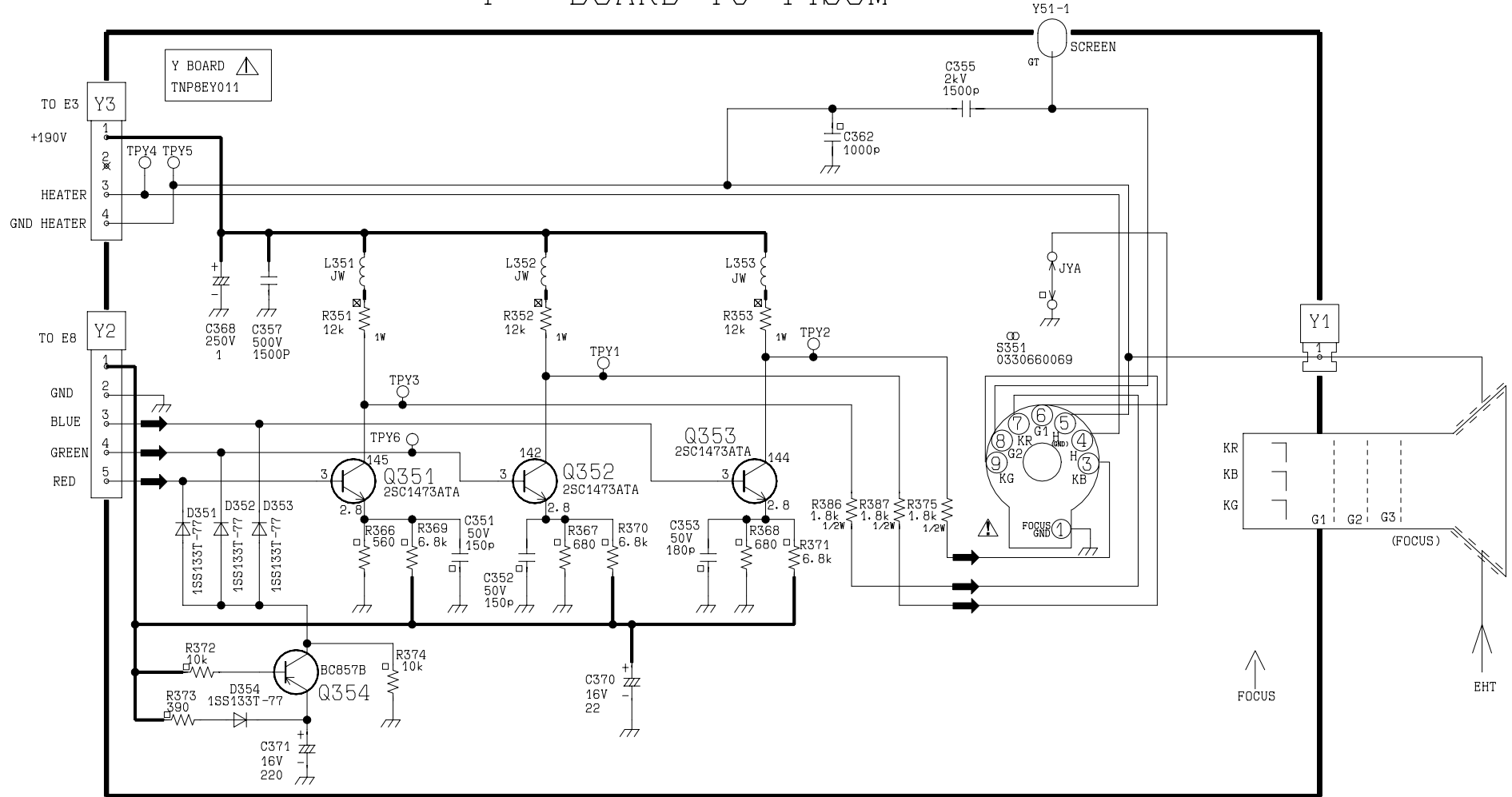
E - BOARD TC-14S3M



Y - BOARD TC-21S3M



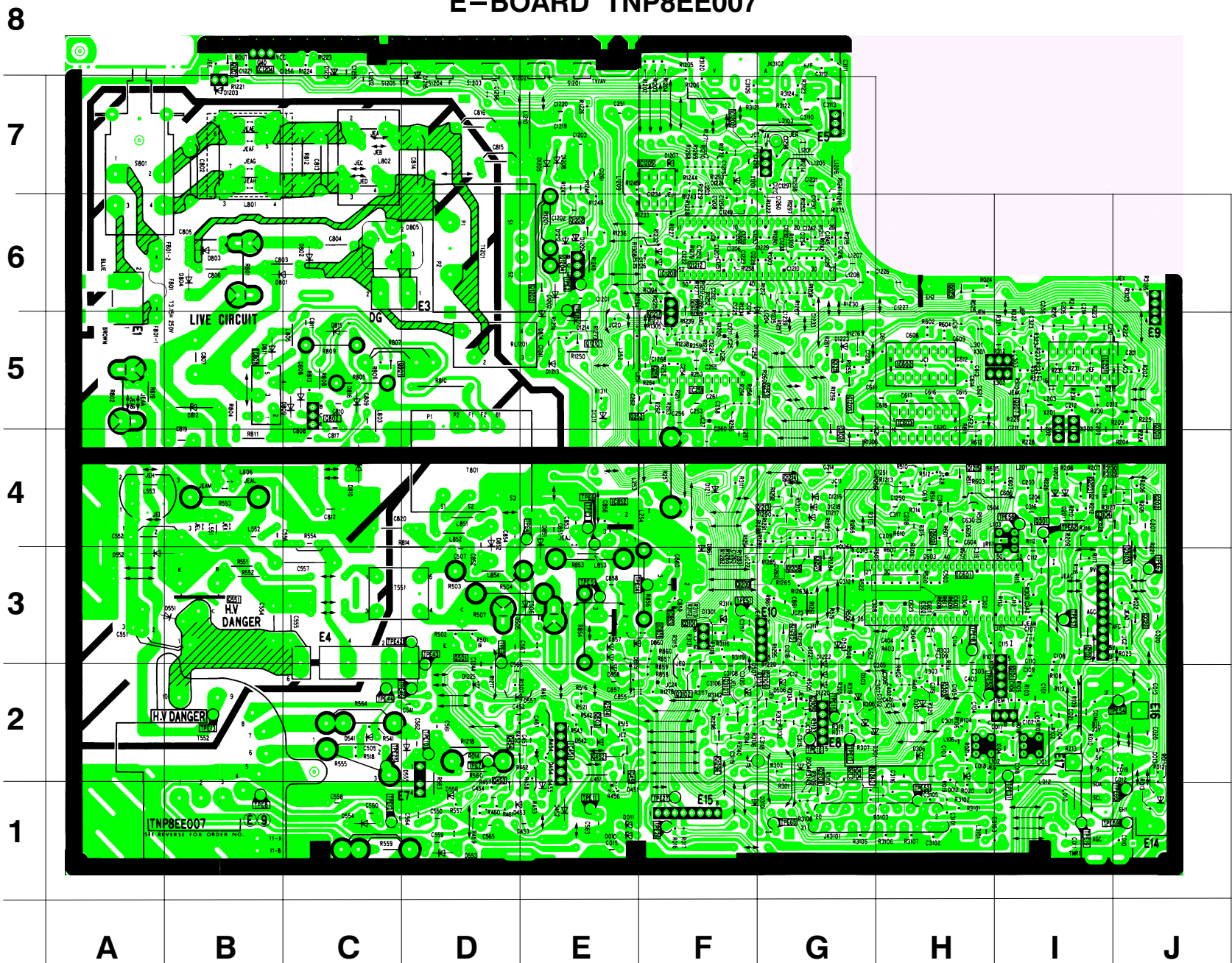
Y - BOARD TC-14S3M



E –PCB TNP8EE007

DIODES				TRANS				TEST POINT	
D010	E1	D814	E5	Q022	J3	Q1216	F6	TPE1	E6
D011	E1	D815	C5	Q023	H6	Q1217	F5	TPE2	E6
D012	H2	D816	C5	Q101	I2	Q1240	G2	TPE3	E4
D013	J1	D851	E4	Q102	I3	Q1295	G3	TPE4	E4
D201	J4	D852	D4	Q201	J4	Q1296	F2	TPE5	E3
D202	J4	D857	E3	Q202	J4	Q3101	F3	TPE6	E4
D301	G2	D858	E2	Q203	I4	Q3102	F2	TPE7	D2
D302	G2	D859	E3	Q207	I5	Q3103	J3	TPE8	B1
D303	G2	D860	E3	Q251	F5	Q3105	G2	TPE9	D3
D306	H2	D861	F3	Q252	F5	Q3106	G2	TPE10	D2
D307	H2	D1201	E6	Q252	G5	Q3107	F2	TPE11	E1
D452	E1	D1203	B7	Q301	I4	Q3108	G2	TPE12	C1
D453	D1	D1205	E7	Q302	G4			TPE13	B2
D454	E2	D1207	F7	Q303	H2	I.C.		TPE14	F3
D455	E1	D1208	E7	Q451	E2	IC201	I5	TPE16	G2
D503	G3	D1209	E6	Q452	E2	IC251	F5	TPE17	G2
D504	G2	D1210	G6	Q453	D1	IC451	E2	TPE18	H3
D505	E3	D1211	F4	Q454	D2	IC601	H3	TPE19	I1
D506	G2	D1212	E6	Q501	D3	IC602	H5	TPE25	C2
D507	F2	D1213	E5	Q502	H4	IC603	H5	TPE26	F1
D541	C2	D1214	E5	Q503	E2	IC801	B5	TPE27	F1
D542	F2	D1215	C8	Q504	E2	IC851	E3	TPE31	I2
D551	B3	D1216	D7	Q551	B3	IC852	E4	TPE42	D3
D552	A3	D1217	G4	Q801	C5	IC853	F3	TPE43	D3
D553	D1	D1218	G4	Q802	C5	IC1201	F6	TPE44	C2
D554	C1	D1219	G4	Q1201	B8	IC1202	G7	TPE46	D2
D555	D2	D1220	G2	Q1202	F6	IC1204	B8	TPE50	H2
D556	D1	D1221	G2	Q1203	F6	IC1205	F7	TPE51	F3
D557	F2	D1223	G5	Q1204	F6			TPE52	H1
D801	B6	D1224	F7	Q1205	G5			TPE54	J2
D802	C6	D1225	D2	Q1207	G3			TPE56	I4
D803	B6	D1226	F6	Q1208	G3			TPE57	I3
D804	B6	D1227	F6	Q1209	G3			TPE59	J1
D805	D6	D1301	F3	Q1210	E5			TPE60	J1
D808	C5	D1311	E5	Q1211	G5			TPE62	I4
D809	C5	D3101	F1	Q1212	F6			TPE63	J3
D810	C4			Q1213	G4			TPE65	G1
D811	B5			Q1214	G4				
D812	B5			Q1215	H4				

E-BOARD TNP8EE007



CONDUCTOR VIEWS

Y – BOARD TNP8EY011

TEST POINT	DIODE	TRANS
TPY1	B2	D351 B3
TPY2	E1	D352 A3
TPY3	B2	D353 A3
TPY4	D3	D354 A3
TPY5	E4	
TPY6	A4	

